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ABSTRACT

This study examines the organization and operations of local education foundations in Michigan and the fiscal programmatic impact of nonprofit education foundations on Michigan public schools. It also compares the socioeconomic characteristics of foundation and nonfoundation districts and tests the hypothesis that residents of local districts with education foundations differ from residents of nonfoundation districts in terms of preferences for public schooling. Section 1 summarizes national trends in K-12 public school spending. Section 2 summarizes recent trends in Michigan, including the state's fundamental reforms in 1994. Section 3 discusses the rise of local education foundations in Michigan. This section outlines key findings from a survey of local education foundations and local district superintendents and compares foundation and nonfoundation districts on selected socioeconomic and educational variables. Section 4 presents a model of local education demand to test for behavioral differences between residents in foundation and nonfoundation districts, along with data for estimation of the model. Section 5 present empirical results. Section 6 includes a summary and a conclusion, based on the findings of the study, that the rise of local education foundations in Michigan has not measurably negated the state's efforts to reduce interdistrict disparities through the reform of public funding mechanisms. The author cautions, however, that the results could change as the state funding reform continues to constrain per-pupil revenue growth in historically high-spending and high-income districts and such districts seek additional revenue from nontraditional sources. (PKP)

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Private Funding of Public Schools: Local Education Foundations in Michigan

Since the early 1990s, public schools in the U.S. have been faced with a dramatic slowing of per pupil revenue growth while both enrollments and expectations for academic achievement continue to rise (Hanushek and Rivkin, 1997). To meet their students' and communities' expectations, local school districts in recent years have turned increasingly to a new form of nonprofit organization — the educational foundation. In Michigan, 144 such nonprofit organizations have been established by local districts to raise revenue for curriculum improvements, enrichment activities, capital projects, and instructional materials and to strengthen links between schools and communities. This activity in Michigan is representative of activity nationally. The National Association of Educational Foundations (NAEF) estimates that by the year 2000 there will be 4,000 public school foundations throughout the U.S. (NAEF, 1996).

While the rise of these organizations is not unexpected considering the slowing of revenue growth for public schools, this development has not been viewed with universal approval. The equalization of educational opportunities for all children, regardless of the wealth of their respective local communities, has long been an important goal of educational policymakers. Virtually every state allocates school aid to local districts by means of "equalizing" formulas designed to offset disparities in local fiscal resources.[1] Local education foundations have aroused concern that they may exacerbate fiscal disparities. For example, political economist and former U.S. Labor Secretary Robert Reich has characterized these organizations as "another means by which the privileged are seceding from the rest" (*New York Times*, May 17, 1992).

This study examines the organization and operations of local education foundations in Michigan and the fiscal and programmatic impact of nonprofit education foundations on Michigan public schools. It also compares the socioeconomic characteristics of foundation and non-foundation districts and tests the hypothesis that residents of local districts with education foundations differ from residents of non-foundation districts in terms of preferences for public school spending.

Section I summarizes national trends in K-12 public school spending. Section II summarizes recent trends in Michigan, including the state's fundamental reforms of 1994.

The rise of local education foundations in Michigan is discussed in Section III. This section outlines key findings from our survey of local education foundations and local district superintendents and compares foundation and non-foundation districts on selected socioeconomic and educational variables. Section IV presents a model of local education demand to test for behavioral differences between residents of foundation and non-foundation districts, along with data for estimation of the model. Empirical results are presented in Section V. A summary and conclusions are presented in Section VI.

I. National Trends in Public School Spending

For the past century, public elementary and secondary education in the U.S. has enjoyed remarkably steady revenue growth. Hanushek and Rivkin (1997) report that real expenditure per pupil increased at 3.5 percent per year over the entire period of 1890-1990, with total annual expenditures rising from $2 billion to more than $187 billion, in constant 1990 dollars, over this period. This nearly 100-fold increase is more than triple the growth of the U.S. Gross National Product (GNP) over this period, with K-12 public school expenditures increasing from less than 1 percent of GNP in 1890 to 3.4 percent in 1990.

Since 1990, however, the growth rate in per pupil expenditures appears to have fallen precipitously. While real spending per pupil grew at a 3.75 percent rate in the 1980s, the growth rate from 1990 to 1993 was a mere 0.6 percent (National Center for Education Statistics, 1995). This lower growth rate is due, in part, to the return of growth in school enrollments, which have been rising nationally since 1981. Further, resulting fiscal pressures on public schools are exacerbated by the steady growth of the special education population, for whom financial support is mandated by federal law. On average, per pupil expenditures for special education equals approximately 2.3 times per pupil expenditures for regular education (Chaikand, Danielson and Brauen, 1993). Moreover, the special education population continues to grow more rapidly than the general student population, rising from 11.6 percent of total enrollment in 1990 to 11.9 percent in 1992.[2]

II. School Revenue Trends in Michigan

Spending Since 1981

Trends in state and local revenue per pupil from 1981-82 through 1994-95, in constant 1992-93 dollars, are presented in Table 1.

TABLE 1

Real State and Local Revenue per Pupil, 1981-82 through 1992-93
(Constant 1992-93 Dollars)*

Year	Local Revenue	State Revenue	Total Revenue
1981-82	$2,933	$1,577	$4,510
1982-83	2,862	1,452	4,314
1983-84	2,835	1,427	4,262
1984-85	2,884	1,563	4,446
1985-86	2,832	1,654	4,486
1986-87	3,103	1,814	4,917
1987-88	3,114	1,859	4,973
1988-89	3,732	1,963	5,695
1989-90	3,919	2,039	5,958
1990-91	4,065	2,096	6,160
1991-92	4,170	2,154	6,324
1992-93	4,163	2,150	6,313
% change	+41.9	+36.6	+40.0

*Revenue was deflated by the implicit deflator for state and local government spending.

Source: National Education Association, as reported in American Education Finance Association (1995).

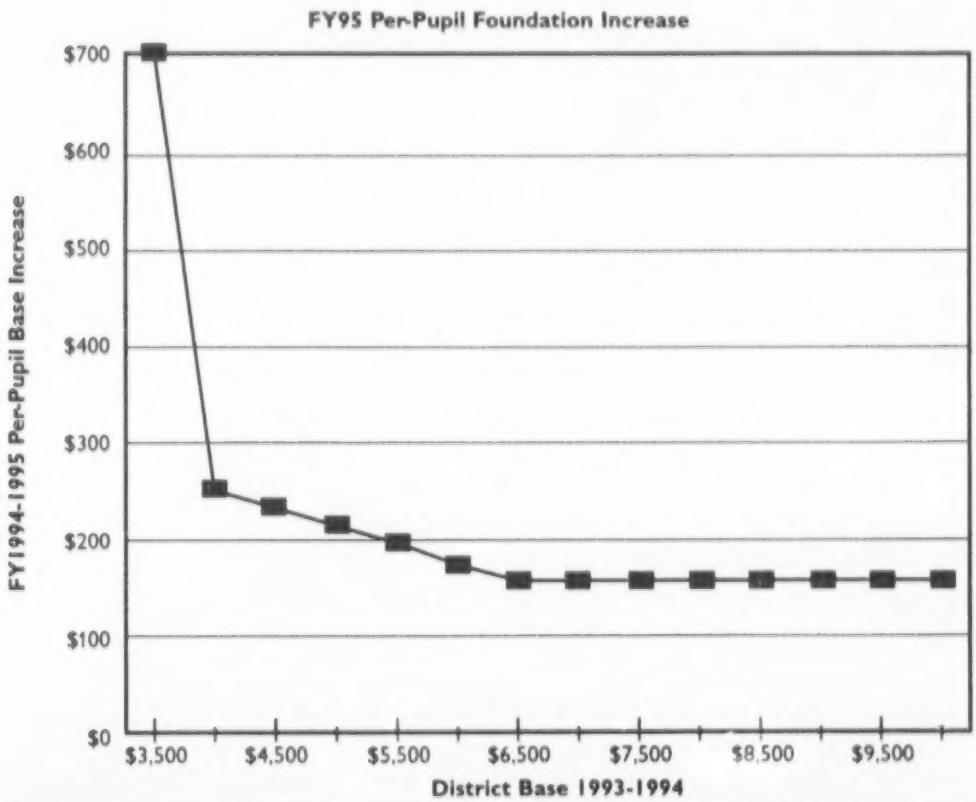
As Table 1 reveals, total per pupil revenue fell in 1982-83 and 1983-84, as Michigan and the U.S. weathered a recession that began in 1979 and persisted until 1983. Real revenue then rose slowly through 1985-86, and increased a robust 9.6 percent in 1986-87. Following a modest 1.2 percent increase in 1987-88, revenue rose by fully 14.5 percent in 1988-89. The rate of real growth then fell steadily from 1989-90 through 1992-93, turning negative in that year. This decline in real per pupil revenue growth, combined with flat or falling enrollments in many Michigan school districts and increasing academic expectations—as reflected by more challenging state assessments of pupil achievement in reading, writing, mathematics and science and an achievement-based school accreditation program created by the legislature in 1994—led some districts to search for nontraditional sources of support.

Michigan School Finance Reform.

In 1994, the Michigan legislature enacted the state's most sweeping fiscal reforms in more than 20 years, reducing property taxes, increasing the state share of school funding and substantially reducing local discretion regarding school taxation and expenditure decisions. On the allocation side, the new legislation replaced a 20-year-old district power equalizing (DPE) school aid formula and numerous categorical grants with a foundation formula that closely regulated local per pupil revenue. Each district's 1993-94 combined state and local ("base") revenue for school operations became the basis for determining its 1994-95 foundation allowance. The major components of a district's base revenues were local ad valorem property taxes, DPE state aid and most state categorical aid.

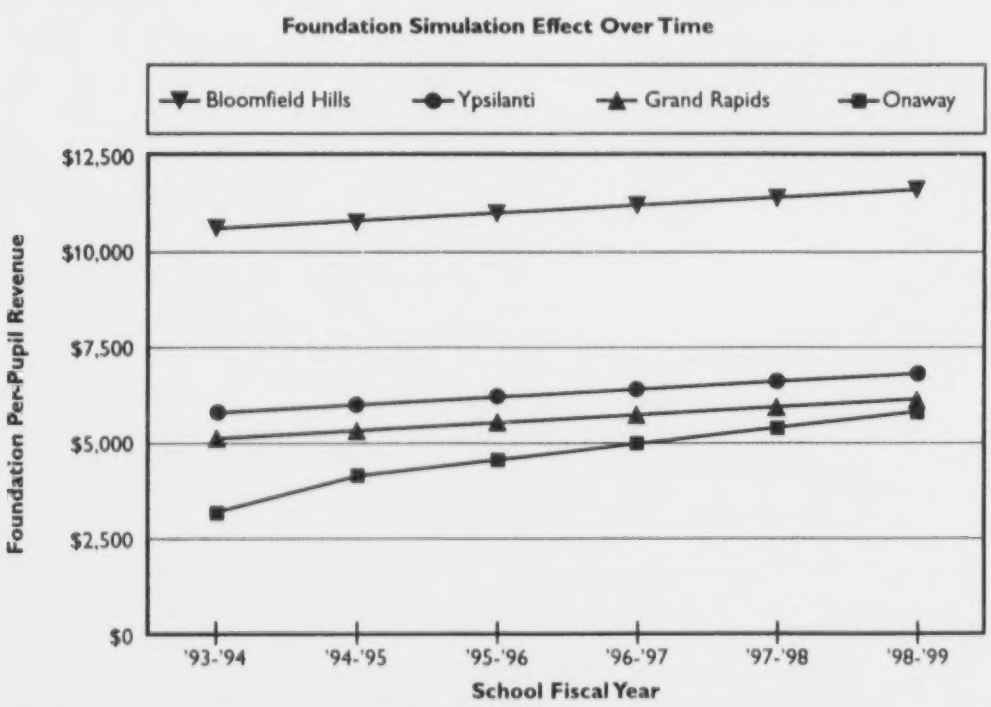
The legislature provided that every district has a foundation allowance of no less than $4,200 per pupil and that every district receives an increase in per pupil revenues over 1993-94 levels, with such increases inversely related to 1993-94 baseline levels. As such, the new state formula substantially constrained per pupil revenue growth for high-spending districts.[2] Figure 1 shows the range of per pupil revenue increases allowed districts in 1994-95 as a function of prior year revenue.

FIGURE 1



Further, the state-imposed constraint on per pupil revenue growth was designed to become binding on more local districts in the 1995-96 fiscal year and beyond. This constraint is imposed on local districts in the form of a state "basic foundation allowance," set at $5,000 for 1994-95 and indexed annually to nominal school-aid-fund revenue per pupil. This basic allowance rose to $5,153 in 1995-96 and $5,308 in 1996-97. Local districts at or above the basic foundation allowance simply receive an absolute dollar increase in their district foundation allowances equal to the dollar increase in the basic foundation allowance.[4] Districts below the basic foundation allowance in 1995-96 and subsequent years receive increases up to double that amount. This constraint, and its "range preserving" effects over time, are depicted in Figure 2. As the finance system is currently designed, the number of local districts subject to this constraint will rise each year, as relatively low-spending districts are boosted to the basic foundation allowance and then "locked in" at that level.

FIGURE 2



Now in its third year, Michigan's foundation formula has constrained per pupil revenue growth for local districts with foundation revenues in excess of the state basic level. This slowdown in growth arises from new restrictions on both local school district tax rates and state revenue dedicated to K-12 programs. This slowdown has been particularly acute for districts with exceptionally high tax bases and per pupil revenue.

TABLE 2

Total Current Operating Expenditures (TCOP)
for Local School Districts in Michigan, 1978-79 through 1995-96

	Total Current Operating Expenditures			Total Current Operating Expenditures	
Year	Current $	Constant (1978) $	Year	Current $	Constant (1978) $
1978-79	$3,500,835,368	$3,500,835,368	1987-88	5,942,575,941	3,281,559,413
1979-80	3,826,569,438	3,552,989,265	1988-89	6,288,766,404	3,348,829,226
1980-81	4,121,362,304	3,438,193,296	1989-90	6,724,945,765	3,440,045,918
1981-82	4,311,715,359	3,169,213,788	1990-91	7,203,792,607	3,516,275,007
1982-83	4,389,380,997	2,922,357,521	1991-92	7,701,674,138	3,566,745,769
1983-84	4,614,552,543	2,895,678,052	1992-93	8,036,838,341	3,571,928,152
1984-85	4,899,844,003	2,979,353,036	1993-94	8,748,283,541	3,774,879,629
1985-86	5,279,439,298	3,081,264,911	1994-95	9,606,041,491	4,024,147,078
1986-87	5,578,143,123	3,138,902,213	1995-96	10,253,359,164	4,186,582,485

Source: Michigan Department of Education

Table 2 provides some context for viewing the rise of local education foundations in Michigan, the oldest of which dates from 1981, when the nation's economy was in recession and Michigan's K-12 operating expenditures were falling in real terms. Indeed, beginning in 1979-80, real current operating expenditures fell four consecutive years and did not regain the 1979-80 level until 1991-92. Such a slowdown in real public revenue growth provides at least some rationale for the rise of local education foundations in Michigan.

III. Local Education Foundations

Generally, a foundation is a non-profit, tax-exempt entity with a board of trustees engaged in raising, managing and disseminating resources for one or more designated purposes, such as charitable, religious, literary, scientific or educational. Foundation trustees are generally selected from the local community and focus on raising resources, while directors implement policies and programs.

Creating a local education foundation in Michigan is relatively simple. Organizers file a four-page "Articles of Incorporation" form, along with a $20 fee, with the Corporation Division, Corporation and Securities Bureau, Michigan Department of Commerce, as required by Michigan's Nonprofit Corporation Act (P.A. 162 of 1982). Foundations generally begin operations within four to six months of filing "Articles," and often exist along-

side booster and parent groups that also raise funds for the local public schools. Although their fundraising activities may overlap (e.g., raffles, sales, etc.), foundations often focus on developing partnerships with corporations, individual major donors and other foundations, and seek planned gifts through wills and memorials. Grants are often made to teachers for innovative instructional practices, visual arts, and technology, areas seldom supported by booster groups. Further, education foundations usually limit grants to items not normally part of the local school district budget.

Surveying Foundations in Michigan

Local educational foundations in Michigan were identified through a computer search of files of both the Corporation Division, Corporation and Securities Bureau, Michigan Department of Commerce and the Charitable Trust Division of the Michigan Attorney General's office. A total of 144 local education foundations were identified. Questionnaires were then mailed to the education foundations and, as a follow-up, to their associated local school district superintendents. A profile of the respondents is presented in Table 3.

TABLE 3

Profile of Local Education Foundations Responding to Survey, 1996

Year Established	Years of Operation	Number of Foundations			
		Urban	Suburban	Rural	Total
1995	1	1	1	1	3
1994	2	0	1	2	3
1993	3	1	2	1	4
1992	4	0	2	3	5
1991	5	1	3	4	8
1990	6	0	0	1	1
1989	7	0	1	0	1
1988	8	0	2	2	4
1987	9	0	2	3	5
1986	10	1	4	4	9
1985	11	1	2	2	6*
1984	12	2	1	0	3
1983	13	0	0	0	0
1982	14	0	0	1	1
1981	15	0	0	1	1
Total	——	**7**	**21**	**25**	**54**
Average foundation revenue, (1994-95)		$64,891	$19,734	$11,258	$19,539

*One foundation did not respond to the "urban/suburban/rural" question.

As Table 3 indicates, local education foundations are generally found in rural and suburban school districts. Organizational activity accelerated during the period of 1985 through 1988, a period marked by variable growth in real per pupil revenue growth. (Indeed, the greatest increase in local foundations occurred in 1986, while real state and local per pupil revenue rose fully 9.6 percent during the 1986-87 school fiscal year.) Formation of new foundations has accelerated since 1991, when eight responding foundations were established. Annual foundation revenues, however, have been quite modest, averaging a mere $19,539 in 1994-95.

Comparison of Foundation and Non-Foundation Districts

While total foundation revenues to date have been modest thus far, the presence of a local education foundation provides a potential source of supplemental revenue for and suggests a heightened community interest in local public schools. To begin testing for educationally relevant differences between foundation and non-foundation districts, one-way analysis of variance was used to compare the mean values of selected district revenue measures, household economic characteristics, district size, and measures of student achievement of each district group. The "foundation" districts consist of all 144 districts identified through the state databases described above, not merely the survey respondents. These mean values and associated significance levels are presented in Table 4.

TABLE 4

Comparison of Foundation and Non-foundation District Means of Selected Measures of Revenue, Household Income, Enrollment and Pupil Achievement: One-Way ANOVA

Variable	Foundation	Non-foundation	P-value
Household Income	$29,336	$24,359	< .0001
% Subsidized Lunch	23%	30%	< .0001
Taxbase per Pupil	$116,937	$114,483	.7748
Math Achievement Gr. 4	64.60%	60.66%	.0023
Math Achievement Gr. 7	53.11%	48.65%	.0024
Math Achievement Gr. 10	38.72%	35.64%	.0116
Reading Achievement Gr. 4	45.18%	40.95%	.0005
Reading Achievement Gr. 7	37.40%	33.98%	.0030
Reading Achievement Gr. 10	45.11%	43.44%	.1567
Enrollment	4,267	2,605	.0421
Ch. 1 Rev. per Pupil	$109.59	$163.17	.0130
Unrestricted Public Revenue per Pupil	$5,336	$5,148	.0537

Source: Compiled by author with published data from the Michigan Department of Education and the Michigan Department of Treasury.

As Table 4 indicates, local districts with educational foundations, on average, enjoy higher unrestricted public revenue per pupil, greater enrollments, higher household income and higher student achievement than their non-foundation counterparts. The differences in the group means are statistically significant for every variable except taxbase per pupil and tenth grade reading achievement. Some differences are striking. For example, household incomes are more than 20 percent higher, on the average, in foundation districts as compared with their non-foundation counterparts. Foundation districts also have a lower percentage of children eligible for free and reduced price lunch under the National School Lunch Act and lower Federal Chapter 1 (now renamed Title I) expenditures than their non-foundation counterparts. Further, the average percentage of students earning satisfactory scores on the Michigan Education Assessment Program (MEAP) is significantly higher among foundation districts on five of the six measures.

These results, while not unexpected, raise concerns regarding the equity in the distribution of educational resources across local school districts in Michigan. Michigan, along with virtually every other state, has adopted state school aid formulas designed to distribute more state aid to local districts with relatively low fiscal capacity, generally measured in terms of taxable property wealth per pupil. Further, state categorical grant programs such as special education, compensatory education and bilingual education are designed to target additional resources to local districts with relatively large concentrations of low-income children and other children who are educationally at-risk. The rise of local educational foundations in relatively high-expenditure and high-income districts may offset to some degree the equity effects of the state's school aid system. Further, students enrolled in foundation districts were overwhelmingly white, with an unweighted average of 91 percent among these districts, thus raising additional equity concerns. These concerns are mitigated, however, by the relatively small financial contributions of the local educational foundations, averaging $19,539 in 1994-95 among responding school districts. These effects may be further mitigated by the relatively large foundation contributions made to urban districts.

IV. A Model of Local School District Spending

The demand for education spending is assumed to be derived from a median-voter, majority-rule model where it can be shown that, under certain conditions, a community's effective demand for education will be that of its median income voter (see Bergstrom and Goodman, 1973).[5]

If the price of private goods x is denoted by p, the individual's budget constraint with private income Y is:

$$Y = px + T(1-F) \qquad (1)$$

where

T = local property taxes

F = the proportion of local property taxes offset by the deductibility of property taxes from state and federal income taxes

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Property taxes are supplemented by lump-sum and matching aid to cover the total cost of local public education. Further, the median voter pays only a fraction of the total local cost, based upon her share of total taxable property in the school district. Thus, the tax obligation of the median voter is given by:

$$T = (c-k)\ (1-s)\ (V_m/V_t) \qquad (2)$$

where

c = total cost of public education in district

k = lump-sum aid paid to district

s = state share of additional dollar of educational expenditures

V_m = median household property valuation

V_t = total property valuation of district

Substituting (2) into (1) and rearranging, the median voter's budget constraint becomes:

$$Y+k\ (\frac{V_m}{V_t})[(1-s)1\ (1+s)=px+c[(1-s)\text{-}F(1+s)](\frac{V_m}{V_t}) \qquad (3)$$

Thus, the total income of the median voter consists of private income and her share of lump-sum aid received by the district, while the voter's price of education is the marginal cost of increasing education expenditures per pupil by one dollar.

The median voter is assumed to maximize a utility function U = U (x, c) subject to the budget constraint given by (3). A demand function for local public education can then be derived in terms of price and income. A simple model of education demand is:

$$E = b_0 + b_1\ PRICE + b_2\ INCOME + b_3\ FREE + by\ ENROLL \qquad (4)$$

where

E = educational expenditures per pupil, including local, state and federal funds

PRICE = marginal tax price faced by the district's median voter

INCOME = median family income in the district

FREE = percentage of children in district eligible for free or reduced price lunch under the national school lunch act (a proxy for educational need)

ENROLL = total district membership (to test for economies of scale in the supply of education)

Marginal Tax Price. A district's marginal tax price of school spending is the cost to the district's median voter of increasing per pupil spending by one dollar. In a guaranteed tax base (GTB) aid system, used in Michigan in 1993-94 to establish "foundation" spending

levels for 1994-95 and subsequent years, the matching rate (m) for a local district is the state share of an additional dollar in locally financed educational expenditures. This matching rate, in combination with district enrollment and the median voter's share of the local district property tax base, determines the marginal tax price:

$$PRICE = n\ (V_m/V_t)\ (1/(1+m)) \qquad (5)$$

Where

n = number of students in the district

V_m = average residential state equalized valuation (SEV) in the district (proxy for median household SEV)

Vt = total SEV of the district

$m = \{(V^* - V_i)/V_i\}$ if the district receives GTB formula aid, 0 otherwise

V^* = nominal GTB formula SEV per pupil guarantee

V_i = district's SEV per pupil

Data. The data on local school district enrollments, expenditures, SEV, and free and reduced-price eligibles were obtained from the Michigan Department of Education. The data on district average household income were obtained from the Michigan Department of Treasury.

V. Empirical Results

The model of school expenditures (equation 4) is estimated with tax price term PRICE calculated according to equation 5. Descriptive statistics for each variable are presented in Table 5. To test for behavioral differences between residents of in-formula and out-of-formula districts, dummy variables are used for the intercept and for each independent variable. The equations are estimated by weighted least squares, where the weighting factor is the square root of the number of families in the school district.[6]

TABLE 5

Variables Associated with Public School Expenditures: Descriptive Statistics — 1994-95

	Foundation Districts		Non-Foundation Districts	
Variable	**Mean**	**SD**	**Mean**	**SD**
Expenditure (E)	5,336	934	5,148	1,018
PRICE	.8504	.1800	.7774	.2112
INCOME	29,335.51	8,044.58	24,358.86	7,783.37
FREE	23.02	13.97	30.10	16.15
ENROLL	4,267.03	4,375.61	2,605.01	9,418.08
N	144		390	

TABLE 6

WLS Regression Coefficients for Michigan School District Expenditure Equation, 1994-95
(standard errors in parentheses)

Independent Variable	WLS Coefficient	P-value
Constant	3147.36 (373.80)	.0000
DUMMY	2584.09 (708.78)	.0003
PRICE	-33.54 (47.59)	.4813
D*PRICE	-3232.64 (356.64)	.0000
INCOME	.06899 (.00970)	.0000
D*INCOME	-.01196 (.01808)	.5086
ENROLL	.0046 (.0019)	.0149
D*ENROLL	.0179 (.0133)	.1768
FREE	914.52 (476.38)	.0554
D* FREE	-2566.69 (894.63)	.0043
Adj. R^2 = .313		

As shown in Table 5, residents of foundation districts spend more per pupil from public (tax) sources than non-foundation district residents, although they face a higher tax price for school spending. Average household income is fully 20.4 percent higher in foundation districts, while the percentage of pupils eligible for free and reduced price lunch is 30.8 percent higher in non-foundation districts. Mean enrollment is higher among foundation districts, while enrollments vary much more among non-foundation districts.

The regression results reveal structural differences in the demand for public school spending across the two voter groups. The coefficient on DUMMY has the expected positive sign and is statistically significant, indicating a preference for higher public school spending on the part of foundation district residents that is not explained by price, income, enrollment or high educational need (i.e., FREE). The coefficient on PRICE

has the expected negative sign but is statistically insignificant. The coefficient on D*PRICE, however, is negative and significant, indicating more price-elastic demand for school spending on the part of foundation district residents. Estimated point price elasticities of demand, calculated at mean per pupil expenditure levels and marginal tax prices, are -.5203 for foundation district voters and -.0051 for voters in non-foundation districts.[7]

The coefficient on income has the expected positive sign and is significant at the .01 level. The coefficient on D*INCOME is insignificant, however, indicating that the relationship between income and desired school spending does not vary across district groups. The positive and significant coefficient on ENROLL (P-value of .0149) and the insignificant coefficient on D*ENROLL indicate the presence of comparable scale effects among both district groups. Finally, the coefficient on FREE is significant (P = .0554) and of the expected positive sign, indicating higher school spending in districts with greater proportions of children with exceptional educational need. In contrast, the negative and significant sign on D*FREE indicates a negative relationship between school spending and concentrations of low-income children among foundation districts. Among this district group, higher spending among high-income and high tax base (i.e., low PRICE) districts may swamp the effects of compensatory spending in less affluent foundation districts.

VI. Summary and Conclusions

Since the beginning of this decade, public schools in the U.S. have been faced with a dramatic slowing of per pupil revenue growth, while both school enrollments and expectations for academic achievement continue to rise. To meet community expectations, local school districts in recent years have turned increasingly to a new form of nonprofit organization—the educational foundation. In Michigan, 144 such nonprofit organizations have been established by local districts to raise revenue for curriculum improvements, capital projects, instructional materials and enrichment activities and to strengthen links between schools and communities. This trend in Michigan is representative of activity nationwide. The National Association of Educational Foundations estimates that by the year 2000 there will be 4,000 public school foundations throughout the U.S.

While the rise of these organizations is not unexpected in light of the slowing of revenue growth and rising expectations for public schools, this development has not been viewed with universal approval. The equalization of educational opportunities for all children, regardless of the wealth of their respective local communities, has long been an important goal of education policymakers. Virtually every state allocates school aid to local districts by means of "equalizing" formulas designed to offset disparities in local fiscal resources. Local education foundations have aroused concern that they may exacerbate the very fiscal disparities public policy seeks to reduce.

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The Michigan research has revealed that total foundation revenues to date have been modest, averaging a mere $19,539 per participating district in 1994-95. However, striking differences were found between foundation and non-foundation districts, with average household income among the former group exceeding the latter by more than 20 percent. The foundation districts, as a group, also have a lower percentage of children eligible for free and reduced price lunch under the National School Lunch Act, greater per pupil revenues from traditional tax sources, and uniformly higher measures of student achievement in reading and mathematics, as measured by the Michigan Education Assessment Program. Further, students enrolled in foundation districts were overwhelmingly white, with an unweighted average of 91 percent across these districts. Again, however, these equity concerns are mitigated somewhat by the relatively small financial contributions of the local educational foundations.

In general, the demand for goods and services, including education, depends on price, income and tastes. A one-way analysis of variance found price and income to differ significantly between the foundation and non-foundation district groups. Further, the estimated school expenditure model, however, revealed some difference in taste preferences for school spending between residents of the two district groups. The substantial per pupil spending differences across the groups were partially explained by differences in price, income, enrollment levels and concentrations of low-income children.

In light of these findings, it appears that the rise of local education foundations in Michigan has not measurably negated that state's efforts to reduce inter-district disparities through the reform of public funding mechanisms. This result could change, however, as the state funding reform continues to constrain per pupil revenue growth in historically high-spending and high-income districts and such districts seek additional revenue from nontraditional sources.

Endnotes

1 Nationally, states provided 46 percent of K-12 public school revenues in 1993-94, with most aid distributed to offset differences among local districts in the ability to finance education. The sole exception is New Hampshire, where state aid comprises a mere 7 percent of K-12 public school revenue. Local property taxes, on the other hand, provide 90 percent of school revenue, while federal sources provide 3 percent. (American Education Finance Association, 1995).

2 Further, because of the mandated status of special education, the expansion of special education in either scope or intensity would take a larger share of any new revenue in times of slow budget growth.

3 The foundation formula guaranteed each local district a per-pupil allowance that ranged from the $4,200 minimum to a maximum of $6,660, provided the district levies a local property tax rate of 18 mills on non-homestead property. Specifically, local districts with 1993-94 base per pupil revenue below $4,200 are raised either to $4,200 or to $250 over their 1993-94 level, whichever is greater. Districts between $4,200 and $6,500 in 1993-94 received a per pupil increase varying linearly from $250 at $4,200 to $160 at $6,500. Finally, local districts with 1993-94 base per pupil revenue more than $6,500 were allowed an increase of up to $160 per pupil if local voters approved "hold harmless" millage sufficient to raise the additional revenue. This local millage is levied against homesteads, up to a maximum of either 18 mills or the district's prior year millage vote, whichever is less.

4 The annual change in the basic foundation allowance is determined by a "final index," which may be written as follows:

$$I = (R_t/R_{t-1})(M_{t-1}/M_t)$$

where

I = final index
R_t = total school aid fund revenue in current year
R_{t-1} = total school aid fund revenue in prior year
M_{t-1} = total pupil membership in prior year
M_t = total pupil membership in current year

The annual basic foundation allowance is determined by:

$$BF_t = BF_{t-1} * I$$

where

BF_t = current year basic foundation
BF_{t-1} = prior year basic foundation

The local foundation allowance for an individual district is determined as follows:

$$LF_t = LF_{t-1} + 2b - [(b-\$50) * (LF_{t-1} - \$4{,}200) / (c - \$4{,}200)]$$

where

LF_t = district's current year foundation allowance
LF_{t-1} = district's prior year foundation allowance
$b = I*BF_{t-1}$ = current year increase in basic foundation allowance
$c = BF_t$ = current year basic foundation allowance

5 From 1973 through 1993-94, Michigan required direct voter approval of local school taxes. Since 1994-95 district spending levels under the foundation system were linear transformations of prior year spending (see Addonizio, Kearney and Prince, 1994) and local school districts serve a single purpose, 1994-95 district expenditures are likely to conform to the predictions of a median-voter model.

6 Because sampling theory reveals that the error team will be a function of the size of the population tested (heteroscedasticity), ordinary least squares would be an inappropriate estimation technique (see, for example, Kmenta, 1971, 322-26).

7 The estimated price elasticity of demand for education spending for the combined sample obtained from a natural log form of spending model is approximately equal to the point elasticities reported above. This estimated expenditure equation is:

$$\ln E = \underset{}{\ln 5.72} - \underset{(.21)}{.1294} \ln \text{PRICE} + \underset{(.0207)}{.2699} \ln \text{INCOME}$$
$$\qquad\qquad\quad (.0130)$$

$$\text{Adj. } R^2 = .278$$

The small standard errors indicate that the coefficients are statistically significant at the .01 level. This log form is a popular functional form for economic models because each slope coefficient may be interpreted as the (constant) elasticity of the dependent variable with respect to the independent variable (see, for example, Kelegian and Oates, 1981, 102-4).

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References

Addonizio, M.F. (1991). "Intergovernmental grants and the Demand for Local Educational Expenditures," *Public Finance Quarterly*, Vol. 19, No. 2, pp. 209-232.

Addonizio, M.F., Kearney, C.P., and Prince, H.J. (1995). "Michigan's High Wire Act," *Journal of Education Finance*, Vol. 20, Winter, pp. 235-269.

Chaikand, S., Danielson, L.C., and Braven, M.L. (1993). "What Do We Know About the Costs of Special Education? A Selected Review." *Journal of Special Education*, Vol. 26, No. 4, pp. 344-370.

Gold, S., Smith, D., and Lawton, S. (eds.) (1995). *Public School Finance Programs of the United States and Canada, 1993-94*. Albany: The American Education Finance Association and The Nelson A. Rockefeller Institute of Government.

Hanushek, E.A. and Rivkin, S.G. (1996). "Understanding the 20th Century Growth in U.S. School Spending," (mimeo).

Kearney, C.P. (1994). *A Primer on Michigan School Finance*, 3rd ed. Ann Arbor: University of Michigan.

Kelejian, H.H. and Oates, W.E. (1981). *Introduction to Econometrics*. New York: Harper & Row.

Kmenta, J. (1971). *Elements of Econometrics*. New York: Macmillan.

National Association of Educational Foundations (1994). *Educational Foundations Focus*, No. 1, Summer.

Wassmer, R.W. and Fisher, R.C. (1996). "An Evaluation of the Recent Move to Centralize the Finance of Public Schools in Michigan," *Public Finance and Budgeting* (Fall), pp. 90-112.